

C. Remarks

The claims are 1, 3, 6-19, 21-23, 25-54 and 56-59, with claims 1, 27, 28, 54 and 56 being independent. Claims 28-54 and 56 have been withdrawn from consideration. Claims 2, 5 and 20 and 24 have been cancelled. Claims 1 and 27 have been amended to include the features of cancelled claims 2, 20 and 24. Claim 21 has been amended to reflect the cancellation of claim 20. No new matter has been added. Reconsideration of the claims is expressly requested.

Under M.P.E.P. § 821.04, Applicants again request rejoinder of the claims of Group II, directed to the method of using the apparatus of Group I, in the event that the claims of Group I are allowed. If needed, Applicants request an opportunity to amend the claims of Group II to be commensurate in scope with claims allowed in Group I.

Claim 2 stands rejected under 35 U.S.C. § 112, second paragraph, as being allegedly indefinite. Since claim 2 has been cancelled, this rejection is moot and should be withdrawn.

Claims 1, 3, 5 and 57 stand rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent No. 5,871,620 (Haug). Claims 2 and 22-26 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Haug. Claims 27, 58 and 59 stand rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent No. 5,900,211 (Dunn). Claim 1, 3, 5, 20, 21, 27 and 57 stand rejected under 35 U.S.C. § 102(a) as being allegedly anticipated by WO 00/23381 (Strobbel).¹ Claims 2 and 22-26 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over

^{1/} The Examiner used the U.S. national stage of Strobbel, U.S. Patent No. 6,610,258 B1, as its English language translation.

Strobbel. Claim 1-3, 5-26 and 57 stand rejected under 35 U.S.C. § 103(a) as being allegedly obvious from WO 98/41311 (Phillips)² in view of U.S. Patent No. 6,299,844 B1 (Tao). The grounds of rejection are respectfully traversed.

Prior to addressing the merits of rejection, Applicants would like to briefly review some of the key features and advantages of the presently claimed invention. The invention, as presently claimed, is directed to an apparatus, which is used to efficiently decompose halogenated aliphatic hydrocarbon pollutants. The apparatus has a case for receiving the pollutants. This case can also contain a light source, which emits light needed to decompose the pollutant. To improve the efficiency of the decomposition, a light reflector is placed outside the case containing the pollutant. As an alternative to placing the light source inside the case containing the pollutant, both the light source and the case containing the pollutant can be placed in another case, which contains a light reflector, to obtain the above-mentioned advantageous decomposition.

The light that is reflected into the container is in the wavelength range from 300 nm to 500 nm. Using the light in this wavelength range has numerous benefits. Unlike UV light, which is shorter than 300 nm, the light that is from 300 nm to 500 nm is not harmful to living organisms. Therefore, unlike devices that utilize UV light, the presently claimed apparatus need not have any special protective means. Furthermore, using such light avoids the need for expensive quartz glass, which is used for UV irradiation. In the present invention, the container may be made, for example, from inexpensive conventional glass (see paragraph [0111]).

^{2/} The Examiner used the U.S. national stage of Phillips, U.S. Patent No. 6,280,615 B1, as its English language translation.

In addition, as mentioned above, the presently claimed apparatus is employed to decompose halogenated aliphatic hydrocarbon pollutants via a reaction with chlorine. Using light that is between 300 nm and 500 nm allows a fast and efficient creation of chlorine free radicals, which decompose the pollutants.

Haug is directed to a process for reducing the nitrate content in water and to a device for carrying out this process. In Haug, polluted water is supplied into the area between two quartz cylinders 18 and 20, which are shown in Fig. 1. The light source, however, is not between these cylinders. Thus, it is clear that Haug does not disclose or suggest a light source positioned in the case for receiving a pollutant (claim 1). Also, Haug does not disclose or suggest a device in which a case containing a pollutant and a light source are inside another case, which has a light reflector (claim 27). Furthermore, since polluted water is irradiated with light through the quartz glass walls of the cylinders, Applicants respectfully submit that the wavelength of the irradiating light is less than 300 nm, which is outside the presently claimed range. Accordingly, it is clear that Haug cannot affect the patentability of the presently claimed invention.

Dunn is directed to deactivation of microorganisms using a light source, which emits high-intensity pulsed polychromatic light. The Examiner has alleged that Fig. 2 in Dunn shows the structure as recited in claim 27. However, as disclosed by Dunn, when the apparatus has a structure shown in Fig. 2, the treatment conduit is made of quartz glass and the flashlamp may also be encased in a quartz sleeve to conduct spectral filtering. Applicants submit that quartz glass filters out the light in the presently claimed wavelength range. In fact, in view of the expense associated with using quartz glass, there would be no reasons to use it other than to limit the spectrum of light reaching the intended target -

microorganisms. As mentioned above, light below 300 nm is harmful to living organisms, which is what Dunn is ultimately trying to achieve.

Thus, Applicants respectfully submit that Dunn does not disclose or suggest the presently claimed apparatus. Furthermore, Dunn is silent regarding decomposition of halogenated aliphatic hydrocarbons using chlorine and any apparatus that is suitable for such a purpose. Accordingly, Dunn cannot affect the patentability of the presently claimed invention.

Strobbel is directed to a device for purifying a fluid with photonic pulses. Strobbel teaches that this fluid flows inside a quartz tube at the time it is irradiated with light. Thus, even if the light from lamp 5 is reflected back into the tube, Applicants respectfully submit that the reflected light in the tube has wavelengths shorter than 300 nm. Therefore, that Strobbel cannot affect the patentability of the presently claimed invention.

Phillips is directed to a fluid mixer and water oxygenator. Applicants respectfully submit that Phillips fails to affect the patentability of the presently claimed invention for several reasons. Phillips teaches that water is irradiated with light that has a wavelength of 254 nm or 180 nm, which is clearly outside the presently claimed wavelength range. Also, as acknowledged by the Examiner, Phillips fails to disclose or suggest a reflector. Clearly, Phillips cannot affect the patentability of the presently claimed invention.

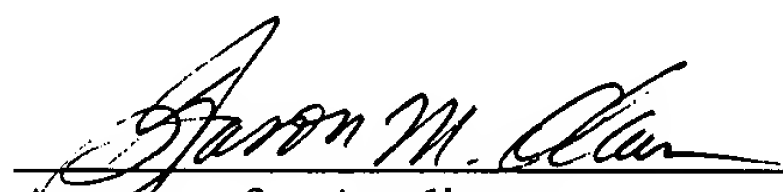
Tao cannot cure the deficiencies of Phillips. The Examiner cited this reference for the alleged teaching of a reflective film being formed on the outside of the case. However, even if assumed, arguendo, that Tao contains such a teaching, this

reference, like Phillips, does not disclose or suggest using light that is from 300 nm to 500 nm. Furthermore, Phillips, when considered as whole, teaches that the housing in its device should not transmit light (see col. 2, lines 56-60).³ Therefore, there would be no motivation to add a reflector outside the housing. Even if such a reflector is added, it will not reflect light back into the housing, because the light will not pass through the walls of the housing. Accordingly, the presently claimed invention is clearly patentable over Tao, whether it is considered alone or in combination with Phillips.

In conclusion, Applicants respectfully submit that none of the cited references, whether considered separately or in any combination, disclose or suggest the combination of elements presently claimed. Wherefore, Applicants respectfully request that the outstanding rejections be withdrawn and that the present case be passed to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

Respectfully submitted,



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^{3/} As mentioned above, such a transmission would be harmful to living organisms.